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WHAT IS CLAIMED IS:

5 1. A method of maintaining optical networking protocols
between optical network connections, the method comprising:
identifying locations of unused portions in overhead of
transmission;

10 mapping predetermined portions in the overhead of the
transmission to the identified locations; and
mapping the predetermined portions from the identified
locations to locations in the overhead that were occupied by the
predetermined portions prior to the mapping of the predetermined
portions to the identified locations.

15 2. The method of claim 1 wherein mapping further
comprises:

maintaining a lookup table regarding locations of the
predetermined portions and identified unused portions; and
referencing the lookup table to identify locations

20 3. The method of claim 1 wherein mapping the predetermined
portions occurs at the entrance to a third party carrier.

25 4. The method of claim 1 further comprising combining data
streams with multiple tributaries into a single data stream.

5. The method of claim 1 further comprising splitting a
single data stream into multiple tributaries.

30 6. The method of claim 1 wherein the predetermined portion
of the overhead is a J0 byte.

35 7. The method of claim 6 further comprising:
storing the predetermined portion to a memory;

sequentially accessing the memory; and
writing into the portion of the transport overhead.

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8. The method of claim 1 wherein mapping further comprises:

determining an amount of space required by the predetermined portion;

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determining an amount of space allocated for the identified portion in the transport overhead;

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placing the predetermined portion into the overhead based on the amount of space required by the predetermined portion and the amount of space allocated for the identified portion.

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9. The method of claim 8 further comprising repeatedly placing portions of the predetermined portion into the identified portion in the overhead until the amount of space allocated is filled.

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10. The method of claim 8 further comprising adding zeros after the identified portion until the amount of space allocated is filled.

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11. The method of claim 8 further comprising consecutively placing a sub-portion of the predetermined portion for each consecutive frame until an entire portion of the predetermined portion is placed in the overhead.

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12. The method of claim 8 further comprising removing zeros in the predetermined portion until the amount of space allocated is filled.

13. The method of claim 1 wherein the predetermined portion of the overhead are B1, B2, and M1 bytes.

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14. An transport system maintaining optical networking protocols between optical network connections of a first network coupled to a second network, the system comprising:

10 map switch coupled to the second network and configured to identify unused portions in an overhead of a data stream from the first network and to map predetermined portions in the overhead of the data stream to the identified unused portions; and

15 de-map switch coupled to the second network and configured to map the predetermined portions from the identified unused portions back to locations in the overhead of the data stream previously occupied by the predetermined portions, prior to the mapping of the predetermined portions to the identified unused portions.

20 15. The transport system of claim 14 further comprising a pass switch coupled to the second network and configured to combine data streams with multiple tributaries into a single data stream and to split a single data stream into multiple tributaries.

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16. The transport system of claim 14 wherein the map switch further comprises a lookup table regarding locations of the predetermined portions and identified unused portions and the map switch references the lookup table to identify the locations.

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17. The transport system of claim 14 wherein the map switch is placed at an entrance of the second network.

35 18. The transport system of claim 14 wherein the de-map switch is placed at an exit of the second network.

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19. The transport system of claim 14 wherein the predetermined portion of the overhead is a J0 byte.

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20. The transport system of claim 14 wherein the predetermined portion of the overhead are B1, B2, and M1 bytes.

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21. The transport system of claim 19 wherein the de-map switch is further configured to store the predetermined portion to a memory, sequentially access the memory and write into the portion of the transport overhead.

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22. The transport system of claim 14 wherein the map switch is configured to determine an amount of space required by the predetermined portion and an amount of space allocated for the identified portion in the transport overhead and place the predetermined portion into the overhead based on the amount of space required by the predetermined portion and the amount of space allocated for the identified portion.

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23. The transport system of claim 14 wherein the map switch is configured to repeatedly place portions of the predetermined portion into the identified portion in the overhead until the amount of space allocated is filled.

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24. The transport system of claim 23 wherein the map switch is configured to add zeros after the identified portion until the amount of space allocated is filled.

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25. The transport system of claim 23 wherein the map switch is configured to consecutively place a sub-portion of the predetermined portion for each consecutive frame until an entire portion of the predetermined portion is placed in the overhead.

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26. The transport system of claim 23 wherein the map switch
is configured to remove zeros in the predetermined portion until
5 the amount of space allocated is filled.

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